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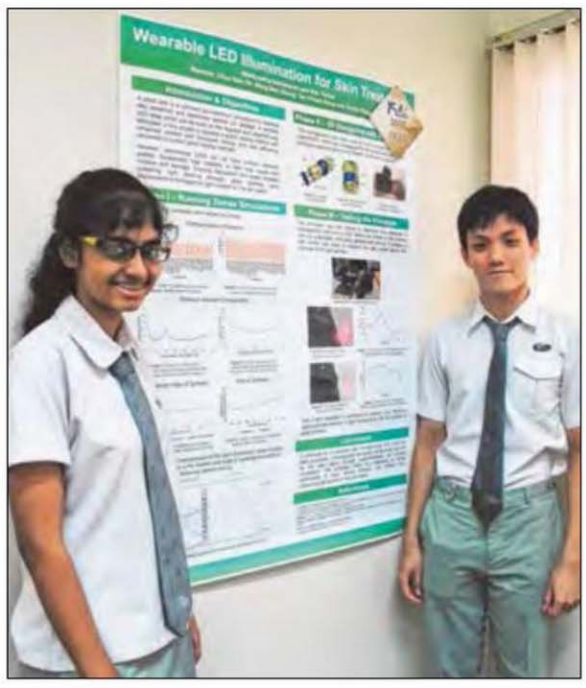
Bus trip on a rainy day sparks innovative idea

Students from NUS High to represent Singapore at Intel fair with an LED strap for light therapy



Whiz kids... Madhumitha Sridharan (left) and Ren Yu Hwa beside a poster that explains their project.
PHOTO: NUS HIGH SCHOOL OF MATHEMATICS AND SCIENCE

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IN MAY, the prestigious Intel International Science and Engineering Fair (ISEF), taking place in the US, will see six projects from Singapore competing. These projects were selected at the Singapore Science and Engineering Fair (SSEF), which took place on March 12.

One team representing Singapore hails from NUS High School of Mathematics and Science and consists of 18-year-olds Madhumitha Sridharan and Ren Yu Hwa. Their project entails the development of a prototype LED strap that is comfortable and energy-efficient, to be worn for patch tests used prior to light therapy.

The duo explained that skin wounds and diseases are often treated by light therapy, where ultraviolet (UV) light is administered on skin segments that require treatment. Patients must first undergo a patch test to determine their skin sensitivity. This is at present an arduous process where the patient is completely covered in bedsheets except for a small segment of skin, which is treated by UV light tubes around the room.

A bus trip on a rainy day inspired the two students, who have a keen interest in physics and engineering, to develop a small strap that can be worn on the specific skin area that requires treatment and administers UV light to the skin in the required dosage. "We observed how a cluster of water droplets on the bus scatter light in several directions and decided to use similar principles for our project," explained Yu Hwa, adding that they used glass spheres to spread light evenly on the skin.

The innovative students believe that their project may pave the way for a more convenient and efficient light therapy procedure in hospitals that will save costs and resources and reduce energy consumption.

Praising the two, their mentor Professor Chua Soo Jin from the National University of Singapore's Department of Electrical and Computer Engineering said they were "fast in learning new concepts and applying them". He added: "They were naturally excited to be able to translate the idea into a working prototype."

The SSEF was "a nerve-racking experience at the start until we got used to the competitive environment", said Madhumitha. "We're also lucky to have been interviewed by judges who were friendly and offered valuable advice for us to improve our project."

Although they have spent six months working on the project, they are still in the process of making improvements to their prototype, making it sleeker and more workable, and improving on their poster-presentation skills.

With only a few weeks to go till the ISEF, the students are understandably excited.

Madhumitha is most looking forward to interacting with students from all around the world. "It really is a privilege to get to know passionate people who are brimming with novel and exciting ideas," she said.

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